engaging a second surface of said crystal disposed opposite said first surface, each edge of said crystal having a length in the range 0.1 to 2.0 millimeters; and a hollow envelope wholly incasing said crystal body and said whisker element and having fused hermetic seals with said first and second conductors for maintaining said conductors in their relative positions, said envelope having a transparent portion positioned with respect to said crystal for admitting radiant energy to the remaining four surfaces of said crystal which do not have electrical connections thereto, whereby said photocell when utilized as a photoelectric device exhibits uniform omnidirectional sensitivity to radiation impinging upon said four remaining surfaces.

3. A photocell comprising: a semiconductor crystal having a substantially cubical form; a whisker element doped with an active electrical-conductivity-type-determining impurity of the opposite type from that contained in said crystal and having one end in the form of a point-contact in off-center contact with a first surface of said crystal and welded thereto; a doped region in said crystal disposed at the point where said whisker element makes contact with said crystal, said doped region being of the conductivity type of said active impurity; a first electrical conductor connected to the other end of said whisker element; a second electrical conductor engaging a second surface of said crystal located opposite said first surface, each edge of said crystal having a length in the range 0.1 to 2.0 millimeters; and a hollow moisture impervious envelope wholly incasing said crystal and said whisker element and having fused hermetic seals with said first and second electrical conductors for maintaining said conductors in their relative positions, said envelope having a transparent portion positioned with respect to said crystal for admitting radiant energy to the remaining four surfaces of said crystal which do not have electrical connections thereto, whereby said photocell when utilized as a photoelectric device exhibits asymmetrical sensitivity to radiation impinging upon said four remaining surfaces.

4. The photocell defined in claim 3 wherein said semiconductor crystal is silicon.

5. The photocell defined in claim 3 wherein said semiconductor crystal is a germanium-silicon alloy.

6. A semiconductor photocell comprising: a crystal body of semiconductive material having a substantially cubical shape, a doped region of an opposite type from that contained in the balance of said crystal body provided in said crystal and adjacent a first surface thereof; a whisker element doped with an impurity selected from the group consisting of donors and acceptors of the conductivity type of said doped region and having one end thereof in the form of a point-contact welded to said first surface at said doped region; a first electrical conductor connected to the other end of said whisker element; a second electrical conductor bonded to a second surface of said crystal opposite said first surface; a hollow moisture impervious envelope wholly incasing said crystal and said whisker element and having fused hermetic seals with said first and second conductors in their relative positions, said envelope having a transparent portion positioned with respect to said cubical crystal body for admitting radiant energy to the remaining four surfaces of said cubical crystal body which do not have electrical connections thereto; and a substantially spherical radiant energy transmitting bead affixed to said envelope at a point coincident with one of said remaining four surfaces of said cubical crystal whereby said photocell when utilized as a photoelectric device establishes a potential gradient between said first and second electrical conductors proportional to the intensity of radiant energy focused upon that surface of said crystal located in register with said spherical bead.

7. The photocell defined in claim 6 wherein said radiant energy transmitting bead is cylindrically shaped.

References Cited in the file of this patent

UNITED STATES PATENTS

2,504,628	Benzer	Apr. 18, 1950
2,586,609	Burke	Feb. 9, 1952
2,640,901	Kinman	June 2, 1953
2,677,106	Haynes et al.	Apr. 27, 1954
2,691,736	Haynes	Oct. 12, 1954
2,694,168	North et al.	Nov. 9, 1954
2,733,390	Scanlon	Jan. 21, 1956
2,735,919	Shower	Feb. 21, 1956
2,818,536	Carman et al.	Dec. 31, 1957